

Climatological Data for August, 1910.
DISTRICT No. 12, COLUMBIA VALLEY.

EDWARD A. BEALS, District Editor.

GENERAL SUMMARY.

There has been a deficiency in precipitation in the Columbia Valley during every one of the last 6 months, and in many localities no rain has fallen for over 2 months. Out of a total of 346 stations in this district there were 162 that reported no rain in measurable quantities during the month of August. Such a drought is unprecedented, and it has caused the streams to become the lowest on record and the ranges to dry up and become bare of feed. The long dry spell was the means of promoting forest fires, which were more numerous than for many years, and they were not under control until near the end of the month, when a few small showers occurred that checked their spreading and cleared the atmosphere of smoke. The temperatures ranged below normal, and there were no damaging hot spells. The harvesting of the grain crop proceeded without interruption, and good yields were reported of fall sown grain, but the spring sown crop was light and in some places was nearly a failure.

TEMPERATURE.

The mean temperature, as determined from the records of 234 stations, was 62.7° , which is 2.8° below the district average. Only 3 stations reported means above the normal. The mean temperatures ranged between 52.4° at Pleasant Valley, in northern Montana, and 73.6° at Ephrata, in central Washington. The warmest sections were in the central portion of the Snake River Valley in Idaho, and in the Valley of the Columbia River in central Washington and north-central Oregon, where mean temperatures above 70° occurred. The coolest sections were in northwestern Montana and northwestern Washington, with mean temperatures of 53° at some stations.

The month was unseasonably cool throughout. The presence of much smoke in the atmosphere prevented the occurrence of the ordinary high maximum temperatures during the day, and also interfered with rapid radiation at night. The highest temperatures occurred generally during the latter part of the second decade, and the lowest were recorded generally from the 23d to the 25th, at which time frost formed east of the Cascade Mountains, and did some slight damage to tender vegetation. During this cool period at some stations the lowest recorded August minimum temperatures occurred. The highest recorded temperature was 110° at Vale, Oreg., elevation 2,450 feet, on the 11th, and the lowest was 10° at Alta, Wyo., on the 24th.

PRECIPITATION.

The average precipitation, as determined from the records of 346 stations, was 0.20 inch, which is 0.43 inch below the normal for the district. At 162 stations there was either no rain or only a trace of precipitation, and only 7 stations reported monthly amounts in excess of the normal. The heaviest rainfall occurred in northern Washington, northeastern Oregon, western Montana, and near the headwaters of the Snake River in southeastern Idaho and western Wyoming. In central and southern Oregon and southwestern Idaho the month was practically rainless. The rains of consequence occurred mostly from the 7th to the 16th, and during the last 3 days of the month.

The greatest monthly precipitation was 2.33 inches at Ophir, Mont., elevation 8,800 feet, and the greatest monthly snowfall was 10.1 inches at Bison Mountain, Mont., elevation 7,240 feet. The greatest 24-hour rainfall was 1.25 inch at Ophir, Mont., on the 29th, while amounts of 1.00 inch occurred at Ovanda, Mont., on the 29th, at Northport, Wash., on the 24th, and at Granite Falls, Wash., on the 31st.

THE RIVERS.

On account of the continued drought the Columbia River, together with its feeders and all other mountain streams in the

district, was unusually low at the close of the month, and with few exceptions the mean stages were the lowest for August ever recorded. The mean stage at The Dalles, 9.4 feet, is the lowest in a record of 16 years, and at Portland the stage of 4.8 feet is the lowest in 17 years.

The Columbia River averaged 1.9 foot below the normal for the month, being 2.3 feet below at Vancouver, 3.8 feet below at The Dalles, and 2.8 feet below at Wenatchee. Compared with the July mean stages, the average was 5.5 feet lower, the August stage being 4.1 feet lower at Vancouver, 5.6 feet lower at The Dalles, and 9.2 feet lower at Wenatchee.

The Willamette averaged 0.5 foot below the normal for August, ranging between 0.3 foot below at Albany and 1.8 foot below at Portland. This river averaged 0.8 foot below the July mean stage, being 0.1 foot lower at Salem, 0.4 foot lower at Albany, 0.5 foot lower at Wilsonville, and 3.7 feet lower at Portland. The stages at Portland are not strictly comparable with those of the other Willamette River stations on account of the effect of tidewater during periods when the water stages are low. In this instance, however, the greater difference is properly attributed to the effects of back water from the Columbia during the preceding months.

Navigation on the Columbia was not interrupted during the month, and on the Willamette conditions remained about the same, the regular boats only going as far as Newberg, except that the last of the month the steamer *Oregonia* began making trips to Mission, a few miles beyond the mouth of the Yamhill River.

The Snake River averaged 1.5 foot below the August normal, and was 1.5 foot lower than the mean stage for July, the stage at Lewiston, Idaho, on the 31st being 0.4 foot below the zero of the gage.

MISCELLANEOUS PHENOMENA.

Westerly winds prevailed over the district during the month; on the 24th and 25th a high pressure area of considerable strength moving southeast from British Columbia produced a strong east wind over the greater part of the district, carrying smoke and ashes from forest fires. A velocity of 42 miles from the west was recorded at Lewiston, Idaho, on the 22d.

The number of cloudy days was less than usual, but the amount of sunshine received was also below the normal, the discrepancy being due to the heavy pall of smoke that covered a large portion of the district during the latter part of the month.

Freezing temperatures occurred on the 24th and 25th at many places in the northern part of the district, killing tender vegetation; the staple crops, however, were not injured. Snow fell in western Montana and at high altitudes in northern Idaho on the 23d and 24th.

Few thunderstorms occurred and none of a destructive nature were recorded.

DRY SEASON IN IDAHO.

CHARLES A. DONNEL, Assistant Observer, Weather Bureau.

The State is experiencing a dry spell of unusual duration. Except in the northern part, where the deficiency in precipitation did not become marked till late in the spring, the dry spell may be said to have begun in March. At the close of August it remained unbroken over the greater part of the State.

Considering the State as a whole, the month of March, with one exception, was the driest since the beginning of authentic records in 1894; in April and May the precipitation was deficient by about 20 per cent; June broke all records for dryness during that month; in July the rainfall was less than one-half the normal; and August was the driest month of any name in the history of

TABLE 1.—Climatological data for August, 1910. District No. 12, Columbia Valley.

TABLE 1.—*Climatological data for August, 1910. District No. 12—Continued.*

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.								Precipitation, in inches.								Sky.	Prevailing wind direction.	Observers.
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number of rainy days, 0.1 in. or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.				
<i>Idaho—Cont'd.</i>																						
Moscow.	Latah.	2,748	18	63.1	- 2.3	96	19	34	24	44	T.	- 0.70	T.	0.0	0	20	7	4	nw.	nw.	University of Idaho.	
Mountainhome.	Elmore.	3,150	5	65.6		103	19	26	30	59	0.00	0.00	0.0	0	30	1	0			Mrs. Ellen Manion.		
Murtaugh.	Cassia.	4	64.6			92	18	29	30	50	T.	-	T.	0.0	0	28	3	0	w.		J. E. Steinour.	
Nes Perce.	Nes Perce.	3,182	2	60.2		94	18†	27	25	54	0.69	- 0.48	0.0	2	20	3	8	nw.		P. Mitchell.		
Oakley.	Cassia.	4,700	18	67.9	- 1.6	98	18	30	25	52	0.04	- 0.59	0.04	0.0	1	21	10	0	s.		John Adams.	
O'Hara Bar.	Idaho.	1,490																			J. D. Agnew.	
Orofino.	Nez Perce.	1,027	6	64.8		99	18	32	35	57	0.02	0.01	0.0	2	28	3	0			Geo. Alteneder.		
Payette.	Canyon.	2,159	20	67.6	- 5.0	102	19	32	30	60	0.00	- 0.22	0.0	0	23	2	6	n.		E. F. Allen.		
Peaceful Valley.	do.	2,380		70.0†		101	10	34	30	51†	0.00	0.00	0.0	0				nw.		J. W. Newton.		
Pebble.	Bannock.	5,277	2	60.2		91	19	17	25	58	0.45	0.17	0.0	5	18	12	1	sw.		Mrs. Fannie Say.		
Pierson.	Custer.	6,900		53.0		86	19	15	25	61	0.00	0.0	0	0	31	0	0	w.		David P. Clarke.		
Pine.	Elmore.	4,100																			Mrs. Jennie Potter.	
Placerville.	Boise.	4,200																			James McDevitt.	
Pleasant Valley.	Ada.	3,000	3	66.4		99	10	36	25†	52	0.00	0.00	0.0	0	31	0	0	nw.		C. E. Friedrich.		
Pocatello.	Bannock.	4,483	11	68.5	- 2.0	92	20	28	25	52	0.11	- 0.45	0.10	0	2	24	7	0	sc.		U. S. Weather Bureau.	
Pocatello Nursery.	do.	5,396	3																		Mrs. Anna M. Wrensted.	
Poplar.	Bingham.	1,665	22	59.8	- 4.0	89	11	30	25	42	0.70	- 0.23	0.34	0.0	5	15	12	4			Stanley Bybee.	
Porthill.	Bonner.	4,300																			H. A. French.	
Powers Ranch.	Boise.	3,100	2																		Mrs. Mary French.	
Pyle Creek.	do.																				Walter L. Cole.	
Rattlesnake Creek.	Elmore.	4,000																			Richard M. Green.	
Richfield.	Lincoln.			65.8		96	19	31	30	55†	T.	-	T.	0.0	0	29	2	0	w.		C. H. Fitch.	
Roseworth.	Twin Falls.										0.00	0.00	0.0	0	22	8	1	nw.		D. B. Hartwell.		
Ruby Creek.	Boise.	4,400																			O. A. Hatter.	
Rupert.	Lincoln.	4,204	4	66.0		96	18	30	30	51	0.00	0.00	0.0	0	30	0	1	w.		Will Parry.		
St. Maries.	Kootenai.	2,263	14	61.4	- 3.0	95	19	31	25	54	0.01	- 0.88	0.01	0	1	10	10	11	w.		J. S. Turnbull.	
Salmon.	Lehman.	4,040	5	61.9		98	20	22	25	54	0.05	0.05	0.0	0	1	27	4	0	w.		E. K. Abbott.	
Salmon River Dam.	Twin Falls.			69.1		95	20	37	30	45	T.	-	T.	0.0	0	26	4	1	n.		Arch M. Gilbert..	
Sandpoint.	Bonner.	2,086																			Richard E. Edgerton.	
Sheep Hill.	Boise.	5,000	2																		Clifford M. Garner.	
Shoshone.	Lincoln.	3,908	3	65.8		92	11	38	30	44	0.00	0.00	0.0	0	26	5	0	w.		O. A. Truman.		
Silver City.	Owyhee.	6,280	3																		A. D. Bradfield.	
Smith Prairie.	Elmore.	5,200																			Wm. W. Newell.	
Smith Ranger Station.	Bonner.	1,080	2																		T. D. Crittenden.	
Soldier Creek.	Blaine.			64.3		96	20	28	24	53	0.00	0.00	0.0	0	30	1	0	w.		J. E. Minear.		
Springfield.	Bingham.	4,420	2	64.6		95	18†	19	25	54	0.00	0.00	0.0	0	27	4	0	sw.		Mrs. W. A. Edwards.		
Sugar.	Fremont.	4,277	4	60.2		89	20	18	25	54	0.15	0.13	0.0	2	29	1	1	sw.		Arthur Cutting.		
Sunnyside.	Elmore.			68.8		102	19	34	30	50	0.00	0.00	0.0	0	26	3	2	nw.		E. A. Wilmot.		
Tripod Mountain.	Boise.	4,300	2																		Mrs. Verna Paddock.	
Twins Falls.	do.	3,825	6	65.6		96	9	32	30	53	T.	-	T.	0.0	0	19	12	0	w.		J. A. Waters.	
Vernon.	Fremont.																				A. M. Slattery.	
Wallace.	Shoshone.	2,728	3	59.5		89	19	32	25	48	T.	-	T.	0.0	0				w.		U. S. Weather Bureau.	
Wendell.	Lincoln.	3,400	3	69.6		102	18	37	25†	55	T.	-	T.	0.0	0	29	2	0	w.		Chas. L. Dingler.	
<i>Washington.</i>																						
Aberdeen.	Chehalis.	162	19	56.6	- 4.4	76	17	36	27	28	0.47	- 0.59	0.23	0.0	5	28	0	3	w.		Carl S. Weatherwax.	
Anacortes.	Skagit.	60	16	59.6		78	3†	40	12†	36	0.72	- 0.15	0.17	0.0	5	19	8	4			Douglas Allmond.	
Baker.	do.	200	4	62.4		92	19	31	24	51	1.24	0.41	0.40	0	4	16	3	12			Rob. M. White.	
Bellingham.	Whatcom.	60	15	59.6	- 1.0	80	19	37	25	50	0.76	- 0.33	0.31	0.0	4	17	9	5	w.		Sanford B. Mayhew.	
Blaine.	do.	57	13	57.0	- 3.0	79	19	33	25	39	0.78	- 0.05	0.26	0.0	6	14	15	2	w.		U. S. Weather Bureau.	
Blalock Island.	Benton.																				Blalock Island Garden Co.	
Blewett.	Chelan.	2,200																			John Boermeister.	
Bremerton.	Kitsap.																				U. S. Navy Yard.	
Brewster.	Okanogan.	1,620		68.0		97	19	39	24	35	0.04	0.09	0.04	0	1	19	11	1	sw.		Mrs. H. F. Bertram.	
Bumping Lake.	Yakima.			55.3		93	19	23	23	50	0.12	0.09	0.0	0	24	0	0	7			U. S. Reclamation Service.	
Cashmere.	Chelan.																				Valley Power Co.	
Cedar River.	King.	535	3																		George Landsburg.	
Centralia.	Lewis.	212	17	59.6	- 4.4	88	17	37	22†	43	1.45	0.74	0.46	0.0	3	10	18	3	w.		I. S. Turner.	
Cheney.	Spokane.	2,351	11	62.9		98	20	30	26	64	T.	- 0.77	T.	0.0	0	20	4	7	s.		Northern Pacific Ry.	
Clearbrook.	Kittitas.	1,930	11	59.6	- 2.6	94	19	23	24	57	0.00	- 0.38	0.00	0	0	28	3	0	nw.		J. A. Balmer.	
Clearwater.	Whatcom.	149	7	57.8		90	19	30	24	54	1.56	0.65	0.0	0	7	12	8	11	s.		Geo. Gibbs.	
Coffey.	Jefferson.	135	14																		W. H. James.	
Colville.	Whitman.	2,300	21	60.3	- 5.4	94	9	29	25	52	0.50	- 0.26	0.20	0.0	3	19	8	4	sw.		W. L. James.	
Conconully.	Stevens.	1,635	10	60.3	- 2.9	93	19	29	24	52	1.02	+ 0.38	0.25	0.0	9	15	9	7	sw.		W. L. Baines.	
Cowiche.	Okanogan.	2,300	10	61.7																	U. S. Reclamation Service.	
Crescent.	Lincoln.	2,250	10																		Otto Wollweber.	
Davenport.	do.	2,450	1	62.4		94	19	34	24†	47	T.	-	T.	0.0	0	29	2	0	w.		W. H. Reed.	
Dayton.	Columbia.	1,700	24	68.0	+ 0.6	96	19	43	24	32	0.00	- 0.49	0.00	0	0	23	6	2	sw.		W. W. Hendron.	
Detroit.	Mason.	30	2	61.9		90	18†	41	24	42	0.53	-	0.38	0.0	2	14	15	2	sw.		Walter O. Eckert.	
Dixie.	Walla Walla.	5,000	1																		T. Z. Andrews.	
Duckabush.	Jefferson.	380	2	59.8		86	18†	35	24	41	0.20	-	0.07	0.0	3	13†	6	11	sw.		E. J. Finch.	
East Sound.	San Juan.	500	15																		Benj. E. Harrison.	
Ellensburg.	Kittitas.	1,571	22	63.0	- 2.7	98	19	29	24†	56	0.00	- 0.28	0.00	0.0	0	22	0	0	nw.		R. Lee Barnes.	
Ephrata.	Grant.	1,285	7	73.6		99	20	30	23	55						0	28	3	0	s.		T. J. Cook.
Forks.	Clallam.	480	1																		E. A. Markham.	
Fort Simcoe.	Yakima.	1,427	16	67.6	- 5.1	100	20	32	24	51	0.00	- 0.21	0.00	0.0	0	23	2	3	sw.		Frank C. Hill.	
Goat Lake.	Snohomish.	2,900	1																		C. M. Mackintosh.	
Gold Creek.	do.	2,600	1																		John W. Anderson.	
Gold Hill.	Klickitat.																				Klickitat Co. Abstract Co.	
Goldendale.	Grants.	1,600	4	64.8		97	19	37	16	46	T.	-	T.	0.0	0	29	2	0	w.		C. H. Cleaver.	
Granite Falls.	Klickitat.	397	7																		Frank Kuehnel.	
Guler.	do.	2,200																			J. A. Marion.	
Hatton.	Adams.	1,100	5	65.2		104	19	33	28	53	0.43	-	0.43	0.0								

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				Mean.	Departure from the normal.			Total.	Departure from the normal.			Greatest in 24 hours.	Total snowfall unmetted.	Number of rainy days, .10 in or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
					Highest.	Date.	Lowest.		Date.	Greatest daily range.										
Washington—Cont'd.																				
Laurier.	Ferry.	64.4			98	8†	34	25†	52	1.05		0.74	0.0	6	4	3	24	w.	Mrs. J. S. Myers.	
Lester.	King.	58.9	6		98	19	34	24†	51	0.75		0.40	T.	2	18	0	13	w.	W. W. Clabaugh.	
Lone Tree.	Chehalis.	56.6	14		66	4†	47	17	16	0.23		0.13	0.0	6	3	16	12	nw.	U. S. A. Engineer Corps.	
Longmire Springs.	Pierce.	2,800	1								0.36		0.26	0.0	2	18	9	4	sw.	U. S. Forest Service.
Lost Creek.	Okanogan.	3,125	1																	P. H. Leese.
Lucerne.	Chehalis.	1,100	3																	Mrs. Barbara Shearer.
Lyle.	Klickitat.	600	17																	Wm. Morganson.
McCumber's Ranch.	Yakima.	2,182	1								0.05		0.05	0.0	1	25	4	2	sw.	Mrs. Mary McCumber.
Merritt.	Chehalis.	2,175	3																	H. B. Smith.
Mottlinger.	Benton.	307	10	71.8	-3.0	100	19	45	25	44	0.00	-0.22	0.00	0.0	0	26	1	4	w.	G. H. Mottlinger.
Mount Pleasant.	Skamania.	650	10	62.4	-2.6	88	17	44	16†	38	0.23	-0.82	0.16	0.0	2	23	4	4	w.	M. G. Trout.
Moxes.	Yakima.	1,000	18	65.8	-4.0	102	19	33	24†	57	0.10	-0.10	0.10	0.0	1	21	9	1	w.	Henry B. Seudder.
Newport.	Stevens.	2,400	50.0					94	19	25	57	0.05	0.05	0.0	1	24	7	0	sw.	Chas. M. Talmadge.
Nighthawk.	Okanogan.	3,050																		Steve Nagy.
North Head.	Pacific.	211	8	54.8	-3.1	74	24	47	17	22	0.45	-0.11	0.19	0.0	S	2	6	23	sw.	U. S. Weather Bureau.
Northport.	Stevens.	1,350	11	62.0		90	21	33	24	45	1.36	+0.14	1.00	0.0	4	11	13	7	n.	Forrest B. Phillips.
North Yakima.	Yakima.	1,070	1	68.0		95	9†	37	24	37	0.12		0.11	0.0	2	25	2	4	n.	U. S. Weather Bureau.
Nutland.	Klickitat.	1		69.0		99	19	33	26	55	0.04		0.04	0.0	1					J. R. Shepard.
Odessa.	Lincoln.	1,540	7																	Wm. N. Neely.
Olga.	Garfield.	5,000	1								0.03		0.03	0.0	1	26	5	0	sw.	Cecil S. Willis.
Olympia.	do.	1,500	18	66.8	-4.7	101	19	35	24	51	T.	-0.52	T.	0.0	0	24	6	1	w.	M. O'Connor.
Port Townsend.	Clallam.	259	15	52.3	-3.4	75	18	35	24	34	T.	-0.70	T.	0.0	4	18	4	4	nw.	Frank Plummer.
Pullman.	Jefferson.	80	20	57.6	-3.3	77	18	45	12†	26	0.53	-0.27	0.28	0.0	4	14	4	13	n.	State Agricultural College.
Quinault.	Whitman.	2,550	18	64.2	-2.6	97	19	33	29	44	T.	-0.73	T.	0.0	0	21 ^b	2	6 ^b	w.	A. V. Higley.
Republic.	Chehalis.	300	3	59.8		86	18	38	24	40	0.65		0.18	0.0	6	19	3	0	w.	Geo. B. Stocking.
Rex Creek.	Ferry.	2,628	10	68.7	-4.5	94	19	29	25	53	1.13		0.85	0.0	4	17	3	11	sw.	James W. Nicol.
Ritzville.	Chehalis.	1,135	3																	Northern Pacific Ry.
Rock Lake.	Adams.	1,825	11								0.10	-0.19	0.10	0.0	1					P. M. Ramsey.
Rosalia.	Whitman.	1,910	4	64.8		98	19	37	47	45	T.		T.	0.0	0	21	9	1	w.	Hans Mumm.
Russells Ranch.	do.	2,425	18	63.8	-1.3	93	19	35	24	40	0.00	-0.72	0.60	0.0	0	25	6	0	sw.	Maggie M. Russell.
Scenic Hot Springs.	Yakima.	2,870	1										T.	0.0	0	19 ^a	10 ^a	1 ^a	sw.	
Seattle.	King.	123	19	60.2	-2.9	82	19	47	24	26	0.17	-0.32	0.09	0.0	4	6	14	11	n.	U. S. Weather Bureau.
Sedro-Woolley.	Skagit.	38	13	60.6	-0.9	92	16	34	24	46	1.85	+0.28	0.95	0.0	0	14	11	6	n.	Mrs. H. L. Devin.
Sixprong.	Klickitat.	1,240	3	69.8		98	19	33	24	42	0.00		0.00	0.0	0	28	1	2	sw.	C. E. Comstock.
Skagit Power Dam.	Whatcom.	100	16	50.4	-2.9	91	19	32	24	44	0.45	-0.64	0.32	0.0	4	18 ^b	5 ^b	8 ^b	nw.	Skagit Power Co.
Snohomish.	Snohomish.	667	11	60.8		92	19	36	24	44	0.36	-1.16	0.12	0.0	5	19	0	12	nw.	Warren Hodge.
Snoqualmie Falls.	King.	3,000																		O. N. Wiswell.
Snoqualmie Pass.	Kittitas.	2,200	1																	C. E. Ingraham.
Snyders Ranch.	Okanogan.	16	15	58.7	-2.8	84	17	39	24	37	0.93		0.48	0.0	4	21	8	2	w.	Geo. M. Snyder.
South Bend.	Pacific.	1,943	29	65.2	-2.7	95	19	37	25	42	0.15	-0.35	0.15	0.0	0	22	5	5	n.	Miss Winifred Eichner.
Spokane.	King.	2,670	1	50.1		81	18†	43	24	26	0.37		0.36	0.0	2	16	9	6	sw.	U. S. Weather Bureau.
State University.	Okanogan.	1,189	11								0.95		0.46	0.0	5	16	11	4	nw.	University of Washington.
Stokes Ranch.	do.	1,000	35	64.2	-2.0	91	17†	43	12†	42	0.29	-0.32	0.16	0.0	2	11	18	3	nw.	Chas. W. Gunn.
Sullivan Lake.	Stevens.	2,700																		U. S. Forest Service.
Sumner.	Pierce.	77	2	58.0		88	19	29	24	46	0.22		0.14	0.0	3	14	5	12	n.	H. E. Thompson.
Sunnyside.	Yakima.	740	15	65.2	-4.3	96	19	36	25	58	0.02	-0.20	0.02	0.0	1	22	9	0	sw.	U. S. Reclamation Service.
Tacoma.	Pierce.	213	24	60.4	-2.6	86	19	45	24	33	0.12	-0.53	0.11	0.0	2	12	11	8	n.	U. S. Weather Bureau.
Tatoosh Island.	Clallam.	86	25	52.9	-2.4	62	24	47	17	44	0.42	-1.69	0.13	0.0	10	5	7	19	s.	Do.
Tieton.	Yakima.	2,000	1	61.2		93	19	31	24	46	T.		T.	0.0	0	28	3	0	w.	U. S. Reclamation Service.
Touchet.	Walla Walla.	556	3	67.0		97	0†	31	25	53	T.		T.	0.0	0	25	4	2	sw.	D. W. Dorrance.
Trinidad.	Columbia.	2,500	1								0.15		0.15	0.0	1	26	4	1	sw.	R. H. King.
Twin Sister Lakes.	Grant.	900	6	72.6		100	19	44	24†	37	T.		T.	0.0	0	29	2	0	nw.	J. C. Wheeler.
Twisp.	Yakima.	4,500																		Elias McCREA.
Tyne.	Okanogan.	1,350	7								0.05		0.03	0.0	2	19	8	4	w.	
Upper Clealum Valley.	Chehalis.	2,000	1																	
Vancouver.	Kittitas.	5,300																		
Vashon Island.	Clarke.	100	35	64.2	-2.0	91	17†	43	12†	42	0.29	-0.32	0.16	0.0	2	11	18	3	nw.	A. A. Quarnberg.
Wahluke.	King.	40	21	58.0	-5.0	78	18†	43	24†	50	0.52	-0.06	0.33	0.0	3	13	4	14	n.	Miss Gertrude McClintock.
Wallace.	Grant.	410	6	70.8		100	19	36	29	44 ^b	0.17		0.17	0.0	1	26	2	3	s.	F. C. Koppen.
Okanagon.	do.	4,000	1								0.60		0.31	0.0	4	15	12	4	s.	G. A. Wallace.
Waterville.	Walla Walla.	1,000	26	70.6	-3.2	98	9	41	24	36	0.11	-0.34	0.11	0.0	1	24	5	2	s.	U. S. Weather Bureau.
Wenatchee (near).	Douglas.	2,624	20																	O. R. Hopewell.
West Branch.	Chehalis.	1,189	11	66.1	-1.6	91	19	39	24	29	0.41	+0.07	0.40	0.0	2	24	3	4	w.	Geo. A. Pitcher.
Wilbur.	Lincoln.	2,000	11	60.9	-3.0	92	19	30	25	51	T.	-0.50	T.	0.0	0	25	3	3	sw.	U. S. Forest Service.
Yale.	Cowlitz.	375	3	61.5		90	17	40	22	44	0.30		0.25	0.0	2	11	20	0	sw.	Rollin J. Reeves.
Zindel.	Asotin.	715	8																	L. F. Williams.
Oregon.	Gilliam.	2,888	2																	M. W. Zindel.
Albany.	Benton.	214	28	63.0	-3.0	92	17	49	17†	42	0.08	-0.44	0.08	0.0	1	19	7	5	n.	F. M. French.
Ashland.	Jackson.	1,963	22	68.4	-0.6	95	19	40	29	39	0.00	-0.37	0.00	0.0	0	14	16	1	w.	G. G. Eubanks.
Astoria.	Clatsop.	78	48	58.7	-2.9	76	17	45	30	24	0.58	-0.52	0.27	0.0	6	11				

TABLE 1.—Climatological data for August, 1910. District No. 12—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, yrs.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.			Prevailing wind direction.	Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmeasured.	Number of rainy days, .01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.			
Oregon—Cont'd.																					
Falls City.	Polk.	355	13	60.8	- 2.0	91	8†	36	12	46	0.06	- 0.50	0.06	0.0	1	28	3	0	e.	Chas. F. Vick.	
Forest Grove.	Washington.	220	20																	Pacific University.	
Gardiner.	Douglas.	72	20	59.4	- 1.7	86	24	44	22†	42	0.14	- 0.71	0.14	0.0	1	20*	9*	1*	nw.	Hon. J. S. Gray.	
Glendale.	do.	1,441	5	60.5	- 3.1	91	8	35	14†	49	0.00	- 0.00	0.00	0.0	0	30	1	0	nw.	B. J. Simpson.	
Glendora.	Tillamook.	575	18	60.0	- 3.1	91	17	35	24	51	0.21	- 1.01	0.11	0.0	2	26	2	3	nw.	Mrs. Jennie Reether.	
Gold Beach.	Curry.	40	8	55.3	-	76	24	36	21	29	0.00	-	0.00	0.0	0	27	0	4	nw.	C. Dewey.	
Granite.	Grant.	4,680	4	55.8	-	97	19	23	25	63	T.	-	T.	-		12	15	4	nw.	L. M. Ford.	
Grants Pass.	Josephine.	956	21	65.1	- 3.5	98	19	32	29	57	0.00	- 0.30	0.0	0.0	0	29	2	0	s.	John B. Paddock.	
Grass Valley.	Sherman.	2,381	8	60.8	-	98	19	29	12	52	0.00	-	0.00	0.0	0	21	10	0	nw.	Oreg. Ry. & Navigation Co.	
Grindstone.	Crook.	5,000	-	57.8	-	91	19	25	15	50	0.00	-	0.00	0.0	0	18	9	4	sw.	Orrin C. Mills.	
Headworks.	Clackamas.	719	4	65.6	-	92	17	49	22†	23	0.09	- 1.78	0.09	0.0	1	13	7	11	s.	Portland Water Works.	
Heppner.	Morrow.	1,950	21	63.5	- 4.6	94	35	24†	43	48	0.00	- 0.27	0.00	0.0	0	26	4	1	nw.	Ralph Kenton.	
Hermlston.	Umatilla.	450	3	69.6	-	99	9	35	25	49	T.	-	T.	-		0	28	3	0	C. W. Kellogg.
Hood River.	Hood River.	300	19	65.4	- 1.1	98	19	37	24	52	T.	- 0.25	T.	-		20	11	0	w.	H. L. Hasbrouck.	
Huntington.	Baker.	2,185	9			96	1				0.00	- 0.23	0.00	0.0	0	8	20	3	J. M. Day.	J. M. Day.	
Jacksonville.	Jackson.	1,640	21	68.6	- 1.1	97	18†	38	29	47	0.00	- 0.44	0.00	0.0	0	27	3	1	n.	E. Britt.	
Joseph.	Wallowa.	4,400	21	56.0	- 6.4	89	19	28	35	45	0.25	- 0.40	0.20	0.0	0	22	8	1	s.	F. F. McCully.	
Klamath Agency.	Klamath.	4,169	3	54.8	-	87	11†	22	30	56	0.00	-	0.00	0.0	0	29	0	0	nw.	Edson C. Watson.	
Klamath Falls.	do.	4,250	15	63.3	- 3.6	91	25	31	29	49	0.00	- 0.29	0.00	0.0	0	30	1	0	nw.	W. H. Heileman.	
Le Grande.	Union.	2,784	24	65.2	- 2.9	99	10	30	25	51	0.29	- 0.24	0.18	0.0	2	24	5	2	nw.	W. A. Worstell.	
Lakeview.	Lake.	4,800	7	69.2	+ 2.9	100	27†	41	23	48	0.04	- 0.25	0.02	0.0	0	31	4	6	s.	Geo. L. Horton, jr.	
Madras.	Crook.	2,150	1					26	25	T.	-	T.	-	0.0	0	29	2	0	nw.	Howard W. Turner.	
Marshfield.	Coos.	12	6	56.8	-	87	24	40	24	47	-	-	-	-		25	0	6	w.	U. S. Weather Bureau.	
McKenzie Bridge.	Lane.	1,400	7	59.6	-	97	19	30	16†	56	0.08	-	0.05	0.0	2	25	0	6	w.	Geo. Frissell.	
McMinnville.	Yamhill.	4,070	4	62.3	- 3.2	92	17	40	14	42	T.	- 0.58	T.	-	0.0	0	22	6	3	ne.	J. H. Pruet.
Merrill.	Klamath.	180	22	61.8	-	92	28	29	52	0.00	-	0.00	0.0	0	0	31	0	0	....	Mrs. Agnes Ritchson.
Mikkalo.	Gilliam.	1,600	4	66.3	-	97	19	37	24	42	0.03	-	0.03	0.0	1	27	3	1	w.	Frank Little.	
Miramonte Farm.	Clackamas.	195	21	63.0	- 2.0	91	17	42	12	39	0.01	- 0.50	0.01	0.0	1	26	5	0	n.	G. M. Muecke.	
Monroe.	Benton.	350	13	62.6	- 2.6	89	17	42	47	39	0.01	- 0.59	0.01	0.0	1	30	1	0	n.	L. A. Peek.	
Mount Angel.	Marion.	435	24	63.6	- 3.0	89	17	45	16	35	0.21	- 0.30	0.21	0.0	1	28	3	0	n.	Dr. U. F. Fisher.	
Mountain Park.	do.	1,440	4	62.8	-	93	19	38	18	42	0.04	-	0.04	0.0	0	23	4	4	w.	M. Markley.	
Musick.	Douglas.	5,000	571			85	9	32	29	38	0.00	-	0.00	0.0	0	29	1	1	sw.	Alex. Lundburg.	
Newport.	Linton.	69	22	56.2	- 1.3	84	24	40	23	42	0.11	- 0.69	0.10	0.0	0	17	5	9	nw.	William Matthews.	
Paisley.	Lake.	4,500	6	65.4	-	90	31	36	29	44	0.00	-	0.00	0.0	0	31	0	0	nw.	E. C. Woodward.	
Pendleton.	Umatilla.	1,070	20	65.7	- 4.7	97	91	34	23†	54	T.	- 0.41	T.	-	0.0	0	26	5	0	sw.	E. F. Averill.
Pilot Rock.	do.	1,817	1	68.6	-	98	10†	39	25	50	0.02	-	0.03	0.0	1	27	3	1	nw.	John P. McManus.	
Pompeii.	Clackamas.	3,879	15	53.5	- 2.8	83	18	33	24	33	0.58	- 1.53	0.48	0.0	2	26	1	4	sw.	O. C. Yocom.	
Portland.	Multnomah.	57	38	63.0	- 2.3	91	18	48	16	34	0.13	- 0.45	0.08	0.0	2	11	16	4	nw.	U. S. Weather Bureau.	
"P" Ranch.	Harney.	4,300														17	2	6	....	J. P. Jefferson.
Princerville.	Crook.	2,864	13	59.8	- 3.5	95	18†	28	28	56	T.	- 0.30	T.	0.0	0	17	2	6	....	Geo. Whittels.
Prospect.	Jackson.	2,750	4													0	1	1	e.	E. F. Graham.	
Ramsay.	Wasco.	1,350		59.8	-	92	19	34	24	44	0.00	-	0.00	0.0	0	30	0	1	e.	Mrs. Iva B. Collins.	
Range.	Grant.	3,500	1	57.8	-	96	19†	26	16	57	0.00	-	0.00	0.0	0	31	0	0	....	Craig Thom.
Richland.	Baker.	2,350	8	65.5	-	100	19	32	25	55	0.05	-	0.05	0.0	1	25	6	0	....	C. G. Morgan.
Riverside.	Malheur.	3,000	11	64.2	- 5.5	101	1†	25	29	64	0.00	- 0.22	0.00	0.0	0	28	5	0	w.	Mrs. Leah Fairman.	
Roseburg.	Douglas.	523	33	64.0	- 2.5	91	18	40	24	44	0.00	- 0.32	0.00	0.0	0	29	2	0	nw.	U. S. Weather Bureau.	
Salem.	Marion.	120	20	63.5	- 2.7	88	17	48	27	38	0.02	- 0.41	0.02	0.0	1	26	2	3	nw.	M. P. Baldwin.	
Siskiyou.	Jackson.	4,115	1	61.2	-	91	25	30	15†	50	0.00	-	0.00	0.0	0	27	3	1	ne.	U. S. Weather Bureau.	
Sparta.	Baker.	4,150	17													0	1	1	ne.	Hon. J. A. Wright.	
Stafford.	Clackamas.	400	13	63.8	- 2.6	92	17	43	1†	38	T.	- 0.86	T.	0.0	0	29	1	1	w.	John P. Gage.	
The Dalles.	Wasco.	112	35	67.6	- 3.2	97	10	41	25	43	0.00	- 0.18	0.00	0.0	0	29	0	2	n.	S. L. Brooks.	
Toledo.	Linton.	75	20	62.7	+ 1.8	82	24	48	1	30	0.08	- 0.48	0.08	0.0	1	29	0	2	n.	C. B. Crosno.	
Umatilla.	do.	340	14	71.0	- 2.7	100	19	43	30	50	T.	- 0.30	T.	0.0	0	26	0	5	w.	Mrs. Helen T. Duncan.	
Vale.	Malheur.	2,242	18	64.7	- 4.3	110	11	31	25	70	T.	- 0.26	T.	0.0	0	28	3	0	n.	H. P. Osborn.	
Van.	Harney.	3,506	4													0	2	0	....	Geo. Howe.
Wallace Orchard.	Polk.	170	1	69.4	-	91	17	53	27	24	0.16	-	0.16	0.0	1	7	24	0	....	Chas. A. Parks.
Wallowa.	do.	2,935	7	60.6	-	97	19	27	27	60	0.06	-	0.06	0.0	1	19	7	5	nw.	L. J. Coverstone.	
Wasco.	do.	1,263	2	66.7	-	94	8	42	16	37	0.00	-	0.00	0.0	0	19	10	2	w.	A. J. Swift.	
Warmspring.	Crook.	1,200	8	64.0	-	98	19	36	25	50	0.00	-	0.00	0.0	0	29	1	1	nw.	C. C. Covey.	
Weston.	Umatilla.	1,800	20	65.4	- 2.9	96	9†	33	24	49	0.18	- 0.51	0.15	0.0	2	15	7	9	sw.	M. A. Baker.	
Williams.	Josephine.	1,368	17													0	0	0	....	J. M. John.
Yonna.	Klamath.	3	59.7			89	3†	22	29	58	0.00	-	0.00	0.0	0	31	0	0	w.	Jacob Rueck.	

*, b, *, etc., indicate, respectively, 1, 2, 3, etc., days missing from the record.

* Precipitation included in that of the next measurement.

** Temperature extremes are from observed readings of the dry bulb; means are computed from observed readings.

† Also on other dates.

‡ Separate dates of falls not recorded.

§ Data are from standard instruments not supplied by the U. S. Weather Bureau.

|| Instruments are read in the morning; the maximum temperature then read is charged to the preceding day, on which it almost always occurs.

¶ Estimated by observer.

||| Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 2.—*Daily precipitation for August, 1910. District No. 12, Columbia Valley.*

TABLE 2.—*Daily precipitation for August, 1910. District No. 12—Continued.*

TABLE 2.—*Daily precipitation for August, 1910. District No. 12—Continued.*

TABLE 2.—*Daily precipitation for August, 1910. District No. 12—Continued.*

TABLE 2.—*Daily precipitation for August, 1910. District No. 12—Continued.*

TABLE 3.—Maximum and minimum temperatures at selected stations, August, 1910. District No. 12, Columbia Valley.

Date.	Montana.				Afton, Wyo.				Idaho.												Vernon.				Wallace.			
	Kalispell.		Missoula.						Boise.		Bonner's Ferry.		Hot Springs.		Lewiston.		Mackay.		Meadows.		Pocatello.		Salmon.		Shoshone.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1..	79	47	88	51	85	43	87	57	81	42	93	.....	87	55	85	46	88	42	91	61	91	42	89	60	.....	.....	89	41
2..	77	44	83	45	80	44	85	51	79	40	88	.....	86	56	83	45	86	35	88	57	85	43	84	47	.....	.....	78	41
3..	78	46	86	43	81	36	93	53	85	41	94	.....	92	54	84	47	92	36	87	50	84	37	87	45	.....	.....	73	41
4..	76	48	85	49	85	36	96	58	80	52	92	56	87	65	87	45	87	37	92	51	95	37	85	43	.....	.....	80	52
5..	66	46	82	47	84	41	94	53	76	46	90	52	87	56	83	44	85	35	83	61	85	48	83	50	.....	.....	77	44
6..	73	51	80	43	82	33	87	54	80	49	90	50	89	54	82	46	96	40	88	49	84	45	86	46	.....	.....	70	45
7..	82	47	86	43	83	36	87	55	87	46	92	53	90	58	84	45	87	41	89	55	84	42	87	47	.....	.....	86	44
8..	84	52	88	47	79	35	87	54	90	46	90	55	94	60	78	48	89	39	83	56	86	42	84	47	.....	.....	88	47
9..	85	50	92	47	83	34	94	57	87	48	95	54	98	58	86	42	95	41	89	51	93	41	90	57	.....	.....	88	47
10..	84	50	92	49	82	41	96	61	89	45	98	60	95	62	86	45	95	45	87	62	91	47	90	57	.....	.....	88	47
11..	84	47	93	51	84	39	93	60	88	49	97	58	94	56	87	53	94	44	88	61	95	45	92	61	.....	.....	85	43
12..	79	49	86	47	80	44	89	56	88	45	94	54	89	57	84	46	89	43	88	62	95	48	87	59	.....	.....	84	46
13..	76	50	83	51	81	40	86	54	83	44	92	53	87	54	85	43	86	39	85	56	87	47	85	51	.....	.....	78	44
14..	72	48	76	45	79	38	78	51	71	49	87	51	78	65	81	40	80	41	83	55	87	39	81	48	.....	.....	68	44
15..	65	42	70	44	75	35	74	46	63	45	80	52	73	60	80	38	74	33	78	56	77	43	77	46	.....	.....	63	42
16..	70	38	74	49	76	36	75	44	79	34	84	48	80	55	78	40	80	40	77	53	76	37	73	43	.....	.....	74	35
17..	78	40	83	38	94	34	84	49	84	38	98	53	88	49	86	37	85	33	84	47	82	33	83	41	.....	.....	81	37
18..	83	42	93	43	86	37	95	52	90	40	100	59	99	52	88	47	96	35	92	55	92	34	91	52	.....	.....	89	41
19..	86	50	93	50	86	38	99	57	94	43	99	58	100	59	90	52	103	40	91	63	92	41	90	57	.....	.....	89	46
20..	86	48	86	49	87	44	94	62	90	47	92	51	96	57	89	51	94	40	92	64	98	39	91	59	.....	.....	83	50
21..	74	53	85	55	85	40	88	55	79	54	90	50	90	56	89	47	92	42	88	57	90	56	93	48	.....	.....	76	46
22..	73	48	74	53	83	33	88	52	71	50	84	47	85	52	86	43	86	33	80	51	86	36	86	44	.....	.....	74	45
23..	62	37	63	54	81	34	79	48	67	49	71	51	74	56	82	43	80	32	81	51	80	34	80	42	.....	.....	70	45
24..	57	34	59	32	66	32	66	32	69	48	65	28	83	46	88	44	84	32	67	39	64	40	72	46	.....	.....	62	38
25..	66	30	74	29	74	16	83	43	89	28	95	54	80	42	70	27	76	31	80	28	78	22	77	39	.....	.....	70	32
26..	66	34	79	36	85	28	87	54	86	34	88	48	73	46	86	37	84	31	90	48	93	29	89	54	.....	.....	67	38
27..	63	39	67	38	82	43	80	49	64	34	82	45	77	45	85	44	82	38	84	58	81	35	81	46	.....	.....	64	37
28..	68	35	71	35	85	35	78	48	69	33	86	51	75	45	86	38	77	32	83	46	67	33	76	39	.....	.....	66	36
29..	62	44	55	45	66	37	68	48	71	37	78	43	76	56	62	38	69	39	66	46	64	39	68	45	.....	.....	67	46
30..	67	38	75	33	74	22	81	50	74	42	80	37	83	46	71	31	78	27	79	36	87	37	78	38	.....	.....	74	36
31..	68	48	76	51	81	28	83	52	69	45	84	46	82	53	77	39	80	35	83	47	80	34	80	41	.....	.....	70	49
Mns	73.8	44.4	79.8	44.9	80.8	36.0	85.1	52.6	78.3	42.7	89.2	51.2	85.5	54.4	82.0	43.2	85.1	37.2	84.5	52.6	84.8	39.0	83.5	48.1	.....	.....	76.3	42.7

Date.	Washington.												Tatooch Island.																																			
	Aberdeen.				Blaine.				Colville.				Kosmos.				Lakeside.				North Head.				North Yakima.				Odessa.				Port Crescent.				Seattle.				Spokane.				Tacoma.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.										
1..	65	46	68	50	82	38	66	47	79	58	55	53	84	58	58	53	60	47	66	53	93	56	79	58	66	52	56	50	56	50	56	50	56	50	56	50												
2..	64	47	67	42	85	38	59	55	57	56	53	53	86	51	59	51	59	45	72	52	92	56	83	57	74	51	57	51	57	51	57	51	57	51														
3..	67	52	70	42	87	41	66	49	85	57	54	52	88	57	57	53	60	51	67	54	84	58	81	64	68	53	56	51	56	51	56	51	56	51														
4..	68	43	70	45	77	43	79	53	62	62	53	53	85	63	63	59	59	45	73	52	92	56	83	57	74	51	57	51	57	51	57	51	57	51														
5..	69	50	67	52	80	47	70	46	86	60	57	53	87	53	53	59	59	51	67	53	87	55	77	56	70	52	55	51	55	51	55	51																
6..	68	49	67	50	86	46	75	52	82	61	56	52	89	58	58	53	60	47	68	54	82	56	78	55	80	52	56	51	56	51	56	51																
7..	66																																															

TABLE 3.—*Maximum and minimum temperatures at selected stations for August, 1910. District No. 12—Continued.*

Date.	Walla Walla, Wash.		Oregon.																				The Dalles.		Vale.	
			Ashland.		Baker City.		Eugene.		Gold Beach.		Hermiston.		Marshfield.		Portland.		Prineville.		Roseburg.							
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1.....	83	61	84	50	.....	.....	78	45	67	41	89	59	64	53	71	51	.....	.....	82	48	83	53	98	96	39	39
2.....	85	56	87	53	.....	.....	79	47	67	43	86	50	62	49	77	53	88	33	84	48	85	51	97	97	43	43
3.....	93	57	86	53	.....	.....	79	48	64	41	72	49	63	50	77	55	90	37	82	49	90	55	95	95	38	38
4.....	85	63	85	50	.....	.....	76	44	66	48	92	63	65	53	69	50	80	36	82	46	84	56	91	91	36	36
5.....	85	59	83	49	.....	.....	75	40	65	49	98	53	64	50	72	52	84	35	81	47	80	50	93	93	35	35
6.....	87	61	83	49	.....	.....	76	46	67	51	89	59	65	52	76	54	82	38	80	47	84	56	95	95	34	34
7.....	87	63	88	55	.....	.....	80	49	66	50	90	60	65	52	81	56	81	40	86	50	88	58	95	95	37	37
8.....	93	66	91	58	.....	.....	85	55	68	51	95	55	63	50	84	60	90	44	89	55	94	61	96	96	38	38
9.....	98	67	89	60	.....	.....	83	52	64	53	99	56	63	52	79	57	91	47	86	53	90	102	99	99	39	39
10.....	93	65	88	59	.....	.....	80	46	64	43	97	61	62	50	78	52	91	41	86	51	88	52	103	103	38	38
11.....	90	66	86	56	.....	.....	78	46	63	44	94	60	64	52	76	52	86	42	81	48	87	54	110	40	40	40
12.....	87	63	82	54	.....	.....	73	44	68	46	92	61	65	50	76	50	82	37	82	45	84	56	107	38	38	38
13.....	84	61	82	51	.....	.....	79	48	68	44	81	61	69	53	72	53	80	35	81	47	78	60	94	94	38	38
14.....	75	57	76	52	.....	.....	72	49	65	48	86	56	66	49	70	56	72	49	74	48	75	53	88	51	51	51
15.....	69	52	76	45	.....	.....	70	45	65	48	77	52	66	45	65	51	68	36	73	46	71	54	87	36	36	36
16.....	79	50	84	46	.....	.....	80	42	65	52	80	40	60	49	80	48	74	29	82	44	82	43	86	34	34	34
17.....	89	55	89	53	.....	.....	87	48	68	41	88	43	59	47	88	59	84	34	89	48	88	47	88	32	32	32
18.....	92	61	93	57	.....	.....	88	49	58	48	95	46	61	53	91	57	95	39	91	50	92	50	100	42	42	42
19.....	95	65	95	57	.....	.....	88	47	58	48	98	49	58	50	84	56	95	42	88	50	97	54	104	49	49	49
20.....	93	71	86	54	.....	.....	84	42	61	49	92	64	62	52	68	54	83	32	77	48	90	63	98	48	48	48
21.....	96	55	84	52	.....	.....	72	44	65	36	91	57	64	42	69	56	77	34	73	48	79	55	94	49	49	49
22.....	82	57	83	59	.....	.....	71	42	66	38	90	56	66	44	68	52	80	36	80	43	74	53	95	42	42	42
23.....	74	51	84	59	.....	.....	74	41	68	49	84	59	65	42	73	49	.....	78	46	78	50	87	66	66	66	66
24.....	70	41	87	48	.....	.....	88	41	76	54	78	42	87	40	74	52	.....	84	40	74	52	78	47	47	47	47
25.....	74	43	93	63	.....	.....	75	51	64	41	76	35	65	46	78	60	.....	84	46	77	41	79	31	31	31	31
26.....	77	54	82	53	.....	.....	68	45	61	45	81	40	67	50	63	50	.....	73	48	71	45	83	35	35	35	35
27.....	78	52	77	47	.....	.....	71	43	61	39	82	51	62	46	67	53	.....	75	43	75	43	89	38	38	38	38
28.....	71	56	69	47	.....	.....	68	46	66	42	80	53	67	52	64	53	62	28	67	50	71	54	84	39	39	39
29.....	74	52	78	40	.....	.....	70	42	65	45	78	51	67	47	69	54	80	40	75	43	75	48	79	39	39	39
30.....	83	51	83	46	.....	.....	77	43	68	46	83	39	63	46	74	51	80	36	82	43	82	55	85	30	30	30
31.....	79	56	79	49	.....	.....	75	47	66	44	82	49	66	53	69	53	76	36	78	47	76	53	88	37	37	37
Means.....	83.5	57.7	84.3	52.5	.....	.....	77.4	45.9	64.9	45.7	86.6	52.5	64.6	49.0	74.3	53.5	82.0	37.5	80.8	47.3	82.0	53.3	89.5	39.9	39.9	39.9